

A Petition for Extension of Time to file this Amendment and the accompanying Declaration was filed with the Amendment on September 19th.

THE CLAIMS

Claim 1 is set forth below and can be considered as typical of the other pending claims.

Claim 1 (previously presented)

A method of packaging a PVA sponge for use in scrubbing semiconductor wafers, said method comprising:

- (a) placing said sponge in a flexible plastic bag;
- (b) said sponge containing a quantity of de-ionized water with around 0.05% to around 0.1% by volume of hydrogen peroxide; and
- (c) sealing said bag.

In the Amendment of September 19th, the claims all were amended to recite 0.1% as the upper limit for the concentration of hydrogen peroxide.

THE CITED REFERENCES

The references relied on by the Board in its new grounds for rejection are the original references cited by the Examiner, namely:

Paley	5,988,371	23 November 1999
Onodera	6,012,576	11 January 2000

As well as two new references:

"The Dispensatory of The United States of America", 25th Edition, Arthur Osol et al., eds, 670 (1960).

"Integrated Circuits, Fabrication", in 9-McGraw-Hill Encyclopedia of Science Technology, 260, (7th edition 1992) (see pages 2, 6 and 7 of the Opinion).

Onodera is relied on for showing the preservation of PVA sponges in a solution containing 1% to 5% hydrogen peroxide.

Paley is cited to show the suitability of plastic bags for storing and shipping cleaning fluids comprised of water and a bactericide.

Specific passages in the Dispensatory reference were cited by The Board for their teaching of the incompatibilities and the germicidal activity of hydrogen peroxide.

The McGraw-Hill reference was cited for the teaching that in integrated circuit fabrication it is necessary to minimize impurity contaminant effects for all chemicals, solvents, etc., used in the process.

Without elaborating on the reasoning of the Board, as to which the Opinion speaks for itself, the Board concluded that a sound basis exists for a prima facie case of obviousness (Opinion page 13).

The Board then stated as follows:

Skoufis alleges unexpected results in his disclosure (FF3-5; Specification at 4). However, Skoufis does not provide any experimental results. Evidence of expected results must be weighed against evidence of unexpected results (citing cases).

Applicant herewith submits his Declaration Under 37 C.F.R. §1.132 to supply those results.

EVIDENCE OF UNEXPECTED RESULTS

The attached Declaration establishes the following relevant facts:

1. The general knowledge in the field of semiconductor manufacturing technology in late 2000 was that a solution of from 1% to 3% hydrogen peroxide was satisfactory for use as a bactericide. Concentrations toward the high end of this range were preferred in order to assure efficacy. (Declaration ¶4)

2. In attempting to find an advantageous alternative to the existing methods used for preserving PVA brushes he decided to try using a solution of 1% hydrogen peroxide.

3. In tests performed at least twice (see Exhibits 1 and 3 to the Declaration) storage of the PVA brushes in the 1% hydrogen peroxide solution proved highly unsatisfactory because it created concentrations of metallic ions far in excess of acceptable limits. (Declaration ¶9)

4. He decided then to test a solution containing 0.1% hydrogen peroxide, a concentration ten times more dilute, in order to reduce the metallic ions. He did not expect the more dilute solution to be an effective bactericide. (Declaration ¶10)

5. Therefore, the first test performed using the new drastically lower concentration of 0.1% was for efficacy in preventing the growth of bacteria. The test that was performed (Exhibit 2) showed surprisingly, that the lower concentration was effective for the purpose of preventing bacterial growth when used in the PVA brushes.

6. Subsequently, the new much more dilute 0.1% solution was tested for levels of metallic ions formed. These tests results (Exhibit 3) again showed that a solution of 1% concentration produced unacceptably high levels of metallic ions, but that the much lower concentration of 0.1% produced very low and completely acceptable levels of such ions. (Declaration ¶14)

7. Subsequent tests showed the very surprising fact that in the 0.1% hydrogen peroxide solution, the hydrogen peroxide in the package decomposed within 1/2 hour to one hours time after the package was sealed. It was also quite surprising that the hydrogen peroxide was effective to prevent growth of bacteria despite the fact that it decomposed so very rapidly. (Declaration ¶15)

8. This surprising result gave the product an advantage that previously had been available only when the e-beam or gamma radiation methods of sterilization were used; namely, that it could be guaranteed to the customer that none of the preservative would remain in the package when it was received by the customer. This had the significant advantage of not requiring compensation for the presence of the chemical. In contrast, ammonium hydroxide, a competing bactericide, did not decompose and had to be compensated for by the customer when the product was received. (Declaration ¶¶16-20)

9. In another perspective, the invention gives the same advantage to the user as irradiation with e-beams or gamma radiation, without the high cost and uncertainty of the radiation process.

ARGUMENT

The above-detailed unexpected results fully establish the patentability of the invention. Applicant was neither seeking nor expecting to achieve the rapid decomposition of the hydrogen peroxide used to wet the sponge brushes when packaged. In fact, in view of the efficacy of the 0.1% solution to prevent bacterial growth, one would expect that the hydrogen peroxide must have persisted without substantial decomposition for a substantial length of time in order to achieve such efficacy.

In fact, the newly-cited Dispensatory reference supports the finding of an invention, rather than negating it. Although the quotation on page 6 of the Opinion from page 71, column 1, of the reference indicates that hydrogen peroxide is decomposed by many reducing agents, metals, metallic salts, etc., the quotation on the top of page 7 from page 671 regarding germicidal activity of hydrogen peroxide strongly indicates that a solution of 1:1000 (0.1%) of hydrogen peroxide requires a relatively long time, such as six hours, in order to destroy bacteria. In fact, the article states: "If allowed sufficient time, relatively small quantities are highly efficient."

This statement would indicate that the hydrogen peroxide must remain present and active for a relatively long period of time. The surprise is that it apparently does its work within a half hour to one hour's time or less and ends up with a highly advantageous result; namely, that preservation is achieved without developing excessive metallic ions, and with such rapid decomposition of the preservative that the absence of the preservative in the product can be guaranteed even when the product is shipped by express immediately after packing.

SUMMARY

In summary, the invention produces a surprising result in that concentrations an order of magnitude more dilute than the

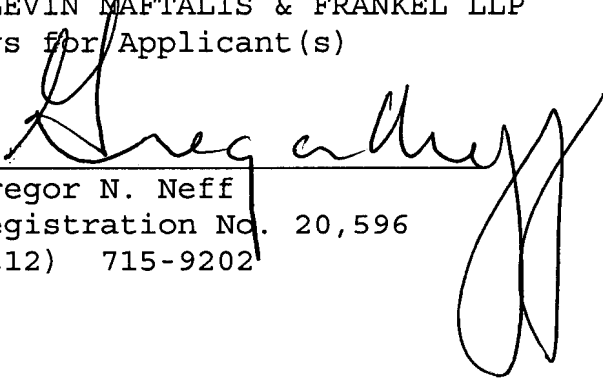
prior art destroy bacteria sufficiently to protect the PVA sponge brushes from bacterial growth, while preventing the development of excessive levels of metallic ions, and decomposing quickly enough to enable the product to be used by the customer without compensation for the presence of the preservative in the sponge brushes.

In view of the foregoing, the claims are patentable over the cited references and their allowance is respectfully requested.

Respectfully submitted,

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Attachment
Declaration